REMARKS

Entry of this Reply under 37 C.F.R. §1.116 is respectfully requested because it places the application into allowance. Alternately, entry of this Reply is respectfully requested because it clarifies issues and places the application in better form for appeal. No new matter is believed to be added to the application by this amendment.

Status of the Claims

Claims 1-3 and 5-21 are pending in the application.

Rejections under 35 U.S.C. § 103(a) over the Applicant's Disclosure in view of Tran, Suzuki and Kaneko

Claims 1, 5-13 and 15-19 are rejected under 35 U.S.C. § 103(a) as being obvious over the Applicant's disclosure in view of Tran (U.S. Patent No. 5,135,581) and Suzuki (U.S. Patent 6,466,293). The Examiner adds the teachings of Kaneko (U.S. Patent 6,433,842) to reject claims 2, 3, 14, 20 and 21. Applicants traverse.

The Present Invention and it Advantages

The present invention pertains to a novel method for forming a pixel electrode. The invention finds a typical embodiment in claim 1, which sets forth:

1. A method of fabricating a pixel electrode in a liquid crystal display including a switching device for driving the pixel electrode, the method comprising:

depositing a protective film over a substrate to cover the switching device;

defining a contact hole in the protective film to expose one electrode of the switching device; and

forming the pixel electrode connected, via the contact hole, to said one exposed electrode, wherein the pixel electrode is formed by placing the substrate in a vacuum chamber and injecting hydrogen-containing gas at a temperature of less than about 400 °C, wherein the substrate has a temperature of less than about 200 °C when forming the pixel electrode.

Distinctions of the Invention Over the Applicants' Disclosure and the Secondary References

The Examiner uses the Applicants' disclosure for teachings pertaining to conventional liquid display devices. However, there has been no admission as to prior art in the Applicants' disclosure. At page 7, lines 5-6 of the Office Action, the Examiner takes the position: "Any invention must be based on a prior art such as the conventional Figs. 1A-Ad, and that must be a prior art." However, the Federal Circuit has recently reaffirmed that the specification cannot be used as prior art absent an admission of prior art by the applicant. See Riverwood International Corp. v. Jones & Co., Inc., 324 F.3d 1346, 66 USPQ2d 1331 (2003).

In the Office Action, the Examiner asserts that Tran discloses forming an electrically conductive oxide composition used as a light transmissive electrode in a liquid crystal display at a temperature form about 20 ^{0}C to about 300 ^{0}C using a stabilizing gas such as H_2 or H_2O. The Examiner also asserts Suzuki teaches forming the LCD in a vacuum chamber.

However, the H_2 or H_2O used as the stabilizing gas in Tran is fundamentally different from the hydrogen-containing gas in the present invention, which is used for a low temperature process in a vacuum chamber.

Tran discusses that when interstitial H ions immersed in the oxide composition by stabilizing gas is present, then oxygen in the ambient air reacts with the H ions rather than the metal ions in the oxide composition. In the absence of the H ions, oxygen in the ambient air reacts with the metal ions in the oxide composition for fill oxygen vacancies in the crystal lattice structure. See Tran at column 3, lines 57-67.

In contrast, the present invention uses a hydrogen-containing gas in place of O_2 gas during sputtering, to thereby make the oxide such as ITO or IZO amorphous.

On the other hand, Tran uses stabilizing gas for increasing oxygen vacancies in the crystal lattice structure of the oxide composition. See Tran at column 3, lines 46-48.

Further, Tran discloses:

> When the precursor is a metal, the use of O_2 is required. The O_2 reacts with the metal to form light transmissive, electrically conductive oxides of the present invention. On the other hand, when the precursor is a metal oxide, the use of O_2 is not required Still, the use of O_2 is preferred even when the precursor is a metal oxide in that metal oxide films have better light transmissive and electrical conductivity characteristics when formed in the presence of O_2 . Tran at column 4, line 66 to column 5, line 8.

Tran thus fails to teach or suggest using a hydrogen-containing gas instead of O_2. Tran accordingly teaches away from the invention.

Suzuki pertains to a process for injecting liquid crystal into a liquid crystal panel formed by joining the upper and lower substrates. Suzuki fails to teach or suggest forming a pixel electrode within a vacuum chamber.

A person having ordinary skill in the art would therefore not be motivated to produce the invention as embodied in claims 1 and 13 by the combination of the Applicants' disclosure with Tran and Suzuki. Claims dependent upon claims 1 and 13 are patentable for at least the above reasons. Further, adding Kaneko fails to address the above-

mentioned deficiencies. A *prima facie* case of obviousness has thus not been made.

These rejections are accordingly overcome and withdrawal thereof is respectfully requested.

Prior art made of record and not utilized by the Examiner

The prior art made of record in the application and not utilized by the Examiner shows the status of the conventional art which the invention supercedes. Accordingly, no further remarks are necessary.

Foreign Priority

The Examiner has acknowledged foreign priority.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No.42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two (2) month extension of time for filing a

reply in connection with the present application, and the required fee of $410.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit

Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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